REMARKS

In the Office Action of March 17, 2004, claims 12, 13 and 16 were rejected under 35 U.S.C. 102(e) as anticipated by Questad et al. USP 6,084,299. Claims 14 and 15 were rejected under 35 U.S.C. 103(a) as unpatenatable over Questad et al.

Questad et al. disclose in Figs. 4a and 4b an integrated circuit package 72 including a semiconductor chip 80, a first adhesive layer 76, a second adhesive layer 74 and a metal heat sink formed by contact pad 78. As indicated at col. 3, lines 44 to 46, one of these layers (the first) is preferentially suited for bonding to the semiconductor chip while the other layer (the second) is preferentially suited for bonding to the mild heat sink. Thus, as stated at col. 5, lines 41-45, the first layer is made of a thermal epoxy resin exhibiting high bond strength to the semiconductor chip and the second layer is made from an epoxy resin system exhibiting high bond strength to metal. Specific examples of such epoxies are set forth at col. 5, lines 45-55.

While Questad et al. states at col. 5, lines 56-58 that the thickness of the first and second adhesive layers "can vary widely, and essentially any thickness can be used," there obviously are practical limits on such thicknesses. Moreover, they go on to state at col. 5, lines 63 to col. 6, line 3 that the second adhesive layer need only be thick enough to enhance the strength of the bond between the first adhesive layer and the heat sink and that thicknesses on the order of 10 to 20 microns have been found to be suitable and that thicknesses less than 10 microns are possible. Thus, it is evident that what Questad et al. actually teach is the use of a very thin second layer.

To emphasize the differences between applicants' invention and Questad et al., claim 12 has been amended to specify that the substrate epoxy and the semiconductor epoxy are made of the same epoxy. Support for this limitation is found at page 3, line 18 of applicants' specification. Claim 12, as amended, is not anticipated by Questad et al. which teach the use of

two different epoxy systems in the two layers wherein the second layer is so different from the first layer that the purpose of the second layer is to improve the bond between the first layer and the heat sink to which the second layer is bonded. Likewise, dependent claims 13-16 are not anticipated by Questad et al.

New claims 17-20 have been added directed to an embodiment of applicants' invention in which the semiconductor epoxy is required to have a thickness of approximately 5 mils (126 microns) or more. Claim 17 has the same scope as original claim 14 which was rejected as obvious over Questad et al. As the Examiner notes, Questad et al. does not disclose the thickness of the first layer attached to the semiconductor. However, Questad et al. indicate at col. 6, lines 2-4 that the thickness of the second layer is, in practice, 10 to 20 microns or even less. Since the thickness of 5 mils (126 microns) specified in claim 17 for the first layer is an order of magnitude greater than the only thickness specified in the Questad et al. patent, it is respectfully submitted that Questad et al. does not suggest such a radically different structure as that specified in applicants' claim 17. Dependent claims 18-20 are believed patentable for the same reason claim 17 is patentable.

In addition, claim 18 is believed patentable for the additional reason that Questad et al. does not provide any teaching or suggestion that the semiconductor epoxy layer is approximately 2.5 times or more as thick as the substrate epoxy. The Examiner's reliance on Fig. 4a for such a disclosure is unwarranted since no indication is given that Fig. 4a is drawn to scale. MPEP § 2125, p. 2100-66 (8th Ed., Rev. 2 (May 2004)).

> [I]t is well established that patent drawings do not define the precise proportions of the elements and may not be relied on to show particular sizes if the specification is completely silent on the issue. See Hockerson-Halberstadt, Inc. v. Avia Group Int'l, 222 F.3d 951, 956, 55 USPQ2d 1487, 1491 (Fed. Cir. 2000)

In light of the above amendments and remarks, the applicants respectfully request that the Examiner reconsider this application with a view towards allowance. The Examiner is invited to call the undersigned at (212) 309-6632, if a telephone call could help resolve any remaining items.

Respectfully submitted.

Date: August 11, 2004

Francis E Morris 24,615

Francis E. Morris (Reg. No.)
MORGAN, LEWIS & BOCKIUS, LLP
101 Park Avenue
New York, NY 10128
(212) 309-6632